MAUL FOSTER ALONGI

MEMORANDUM

To: Dana Bayuk – Oregon DEQ
Jim Anderson – Oregon DEQ
Sean Sheldrake – USEPA

Date: January 13, 2011

From: James G.D. Peale, RG

Project: 8128.01.21

RE: Recommended RBCs for Certain CVOCs for Characterizing Dredged Sediment from Gasco Sediments Site Pursuant to Statement of Work

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During negotiation of the Statement of Work (SOW), identified as Appendix A to EPA Administrative Settlement Agreement and Order on Consent for Removal Action No. 10-2009-0255, certain material disposal requirements were established. Among those disposal requirements, SOW section 3.6.3.1 establishes methods for characterizing dredged materials as a hazardous waste. Specifically, as relevant here, EPA specified that the determination of whether sediments impacted by TCE and its breakdown products contain listed hazardous waste shall be based upon a DEQ-approved risk-based concentration (RBC) that would be developed for the potential exposure pathway of incidental ingestion, dermal contact and inhalation by landfill workers. This memorandum proposes those RBCs to be used for screening sediments from the Gasco Sediments Site (GSS) for the purpose of waste characterization and identifying appropriate disposal facilities (i.e., either Subtitle C or Subtitle D).

SOW Section 3.6.3.1[1] provides:

> The method to determine that sediments impacted only by TCE and associated CVOC chemicals contain F002 Hazardous Waste shall be based on concentrations of TCE, cis-DCE, trans-DCE, 1,1-DCE, and vinyl chloride that exceed DEQ-approved risk-based concentrations (RBCs) to be developed for incidental ingestion, dermal contact and inhalation by landfill workers. If TCE, 1,1-DCE or vinyl chloride are detected in dredged material at concentrations below these RBCs but the material exceeds TCLP criteria for TCE, 1,1-DCE or vinyl chloride, the material shall be designated as a characteristic Hazardous Waste. This method applies to both untreated and post treatment materials. If following treatment, including

[1] This Section also provides direction regarding screening scenarios for sediment containing commingled TCE (and associated degradation products) and MGP-related constituents. The presence or absence of MGP-related materials does not alter the screening scenarios and RBCs for TCE and its degradation products.

> treatment in barges, the material no longer exceeds the RBCs or the TCLP criteria for TCE and associated CVOCs, the material would be determined not to contain F002 Hazardous Waste and not to be a characteristic Hazardous Waste. If the material is determined to contain F002 Hazardous Waste or to be a characteristic Hazardous Waste because of TCE and associated CVOCs it would be disposed of at a Subtitle C facility. If not, the material would be disposed of as Cleanup Material at a Subtitle D facility that meets the requirements described above.

To develop such a landfill worker-specific RBC, MFA first interviewed staff and management at representative disposal facilities regarding operations and procedures in order to evaluate the potential for exposure to materials by landfill workers.[2] Based on the information collected, MFA understands that operations and procedures at those disposal facilities are specifically designed to minimize and prevent exposure by landfill workers. As a result, landfill worker RBCs cannot be developed, as exposure factors specific to landfill workers on which derivation of an RBC is based are minimal.

In light of the actual minimal exposure, MFA recommends as the most reasonable conservative alternative using the Oregon DEQ RBCs for incidental ingestion, dermal contact and inhalation by on-site excavation workers as the applicable screening levels for F002 Hazardous Waste determinations. The excavation worker RBCs are 1,200 milligrams per kilogram (mg/kg), 86,000 mg/kg, and 830 mg/kg for trichloroethene, cis-1,2-DCE and vinyl chloride (respectively). RBCs for trans-1,2-DCE and 1,1-DCE are greater than 100,000 mg/kg. Application of this existing exposure scenario eliminates the need for identification and evaluation of exposure factors for a new scenario, is sufficiently conservative, and is consistent with current guidance.[3] The following text provides additional rationale for the recommendation.

Excavation worker RBCs are proposed as screening levels because they represent a conservative, 'worst-case' human exposure to dredged material in a landfill. The excavation worker scenario is used when exposures to contaminated soil are expected to be limited in duration and frequency. Specifically, the DEQ assumes an exposure frequency of nine days per year for one year. Assuming an eight-hour work day, the excavation worker scenario translates to exposure to contaminated soil for a total of 72 hours. These assumptions represent a much higher duration of exposure for a landfill worker, given the standard safety practices for Subtitle C or D landfills, than is likely to occur.

Based on interviews with landfill operators, MFA understands that a number of standard safety practices limit or eliminate the potential for landfill workers to contact the waste sediment. At Subtitle D landfills, dredged sediment may either be placed in the landfill

[2] Communications with Mark Krenning of Waste Management, Northwest Division. Waste Management owns and operates Subtitle C and D facilities in Arlington, Oregon.

[3] Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites (RBDM) (DEQ, 2003).

immediately following arrival or may also be stockpiled and used as a daily cover. In either case, the material would not be contacted by workers. The material is placed in the landfill or distributed on the face of the landfill using heavy equipment. Workers operating the machines used for placement of dredged sediment (either directly or as daily cover) are in a sealed environment and are not exposed to dust. Landfill safety rules prevent workers from walking on the active face of a landfill, so workers are unlikely to directly contact daily cover material. The DEQ excavation scenario assumes a soil ingestion rate of 330 mg/day. Given the landfill safety practices, worker exposure is likely considerably less.

While the incidental ingestion, dermal contact, and inhalation pathways are therefore not likely to be complete at Subtitle D landfills, in the event that incidental exposure does occur, for the reasons stated above the duration, frequency and quantity of the exposure are likely to be significantly less than the factors assumed for the excavation worker scenario. Sediment containing TCE or its degradation products at concentrations at or below the excavation worker RBCs is therefore not likely to result in increased risk for Subtitle D landfill workers.

For both Subtitle C and D facilities, any exposure to dredged materials by landfill workers is likely to be brief, if exposure occurs at all. Based on the anticipated length of the sediment removal project (and considering the limited extents of Area 2, where sediment impacted by TCE and its degradation products has been found), the actual exposure duration will be significantly less than the 72 hour duration assumed by the scenario. Therefore, the DEQ excavation worker RBCs represent conservative screening levels that are appropriate for the purpose of waste determination.

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